

What is claimed is:

1. A method of providing a game of chance in a gaming machine that is operable i) to receive cash or indicia of credit for a wager on a game of chance and ii)
5 to output cash or an indicia of credit as an award for the game of chance where the gaming machine comprises a master gaming controller, a display device, a memory device and a 3-D graphical rendering system, the method comprising:
receiving the wager for the games of chance controlled by the master gaming controller on the gaming machine;
10 determining a game outcome the games of chance;
rendering one or more two-dimensional images derived from three-dimensional (3-D) objects in a 3-D gaming environment stored in the memory device on the gaming machine wherein at least one of the 3-D objects is a 3-D text object adapted for conveying textual information; and
15 displaying the one or more rendered two-dimensional images to the display device on the gaming machine.
2. The method of claim 1, wherein a text string comprising one or more alphanumeric characters is mapped to the 3-D text object.
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3. The method of claim 2, wherein the 3-D text object is configured to convey at least one of the alphanumeric characters in the text string.
4. The method of claim 1, further comprising:
25 mapping textures with patterns of alphanumeric characters to the 3-D text object to convey the textual information.
5. The method of claim 1, further comprising:
modeling the 3-D text object in a shape of an alphanumeric character
30 to convey the textual information.
6. The method of claim 5, wherein the shape of the alphanumeric character is defined by a plurality of parameterized curves.

7. The method of claim 1, wherein the 3-D gaming environment comprises a plurality of 3-D text objects.

8. The method of claim 1, further comprising:
5 scaling the 3-D text object for conveying the textual information by a scaling factor.

9. The method of claim 8, wherein the 3-D gaming environment comprises two or more 3-D text objects and wherein the gaming machine is operable
10 to apply a different scale factor to each of the two or more 3-D text objects.

10. The method of claim 8, wherein the scaling factor varies as a function of time.

11. The method of claim 8, wherein the 3-D text object is scaled in less
15 three of its dimensions.

12. The method of claim 8, wherein the gaming machine is operable to apply a different scale factor to each of the three dimensions of the 3-D text object.
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13. The method of claim 8, wherein a plurality of 3-D text objects are scaled to fit to a bounding surface.

14. The method of claim 13, wherein a shape of the bounding surface
25 changes as a function of time.

15. The method of claim 13, wherein the bounding surface is a planar surface.

16. The method of claim 8 wherein the 3-D text object is scaled using mip
30 mapping.

17. The method of claim 1, further comprising:

positioning each of the 3-D objects in the 3-D gaming environment.

18. The method of claim 17, wherein the position of one or more of the 3-D objects changes as a function of time.

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19. The method of claim 1, wherein a plurality of 3-D text objects are positioned along a straight line in the 3-D gaming environment.

20. The method of claim 1, wherein a plurality of 3-D text objects are positioned along two or more parallel lines in the 3-D gaming environment.

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21. The method of claim 17, wherein a plurality of 3-D text objects are positioned along a 3-D curve in the 3-D gaming environment.

22. The method of claim 1, further comprising:
guiding a placement of the 3-D text objects using a text page surface.

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23. The method of claim 22, wherein one or more of a shape of the text page surface, a position of the text page surface or an orientation of the text page surface changes as a function of time.

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24. The method of claim 22, wherein a shape of the text page surface is a planar rectangle.

25. The method of claim 22, wherein a shape of the text page surface is a planar multisided polygon.

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26. The method of claim 22, wherein a shape of the text page surface is a 3-D surface.

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27. The method of claim 22, wherein the text page surface is invisible.

28. The method of claim 22, further comprising applying one or more of a static texture, an animated texture or combinations thereof to the text page surface.

29. The method of claim 22, further comprising clipping a portion of a first 3-D text object that extends beyond a boundary defined by the text page surface.

5 30. The method of claim 22, further comprising scaling the 3-D text object to fit within boundaries defined by the text page surface.

 31. The method of claim 1, further comprising:
 orientating an angular position of each of the 3-D text objects in the 3-D gaming environment.

 32. The method of claim 31, wherein the angular position of each the 3-D text objects vary as a function of time.

15 33. The method of claim 31, wherein the angular positions of each the 3-D text objects are oriented so that one surface of the 3-D text objects is aligned with a slope or a normal of a curved line or a curved surface in the 3-D gaming environment.

 34. The method of claim 1, wherein a shape of the 3-D text objects change as a function of time.

 35. The method of claim 1, wherein the textual information conveyed by the 3-D text objects is information from one or more of a game of chance, a bonus game, an advertisement, news, stock quotes, electronic mail, a web page, a message service, a locator service or a hotel/casino service, a movie, a musical selection, a casino promotion, a broadcast event, a maintenance operation, a player tracking service, a drink menu and a snack menu.

 36. The method of claim 1, wherein a text string comprising a plurality of alphanumeric characters is mapped to a plurality of 3-D text objects and wherein each of the 3-D text objects conveys the textual information for one of the alphanumeric characters in the text string.

 37. The method of claim 36, further comprising:

applying one or more typesetting rules for improving a quality of the textual information rendered from the plurality of 3-D text objects representing the text string.

5 38. The method of claim of 37, wherein the typesetting rules are for one or more of i) adjusting a spacing between the characters, ii) adjusting color weights of the characters, iii) justifying the text string, iv) centering the characters, v) adjusting dimensions of strokes defining the characters, vi) aligning the characters with a baseline, vii), positioning the text string to two or more lines, viii) adjusting the
10 spacing between two or more lines of text, ix) adjusting the vertical or horizontal alignment of the characters, x) adjusting a relative size of each character, xi) adjusting pixels defining a text character and xii) and adjusting texels defining a text character.

 39. The method of claim 1, further comprising:
15 prior to rendering the one or more two dimensional images,
 generating one or more font textures wherein each font texture comprises a plurality of characters and
 loading the one or more font textures to a first memory device on the gaming machine.

20 40. The method of claim 1, further comprising:
 rendering the textual information in the 3-D gaming environment for one or more of i) a game outcome presentation for the game of chance, ii) a gaming maintenance operation, iii) an attract mode feature, iv) a promotional feature, v)
25 casino information, vi) bonus game presentation and capturing the textual information on the one or more two-dimensional images.

 41. The method of claim 1, wherein the gaming environment comprises 3-D text object models each defined by a plurality of surface elements.

30 42. The method of claim 41, wherein the surface elements are used to generate a 3-D geometric font.

43. The method of claim 1, wherein the game of chance is selected from the group consisting of a slot game, a keno game, a poker game, a pachinko game, a video black jack game, a bingo game, a baccarat game, a roulette game, a dice game and a card game.

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44. The method of claim 1, further comprising:
displaying a menu of games of chance available on the gaming machine;
receiving one or more inputs signals containing information used to select one or more of games of chance listed on said menu.

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45. The method of claim 1, further comprising:
generating an animated surface texture in the 3-D gaming environment.

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46. The method of claim 45, wherein the animated surface texture is a movie.

47. The method of claim 1, further comprising:
storing one or more of the rendered two-dimensional images to a memory device located on the gaming machine.

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48. The method of claim 47, wherein the stored two-dimensional images are used to provide a game history.

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49. The method of claim 1, further comprising:
loading one or more font textures to a font library in the memory device on the gaming machine.

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50. The method of claim 1, wherein the 3-D graphical rendering system is compatible with OpenGL.

51. A method of providing textual information for a gaming machine that is operable i) to receive cash or indicia of credit for a wager on a game of chance and ii) to output cash or an indicia of credit as an award for the game of chance where the

gaming machine comprises a master gaming controller, a display device, a memory device and a 3-D graphical rendering system, the method comprising:

generating a font texture comprising a plurality of characters drawn in a particular font style, said font texture comprising;

5 one or more font parameters for defining global characteristics of the plurality of characteristics in the font texture;

 one or more character parameters for defining characteristics of each character;

 determining a text string comprising a plurality of characters;

10 determining a text page surface for guiding a placement of the plurality of characters in a 3-D gaming environment;

 for each character in the text string,

 sizing a 3-D object for the character using the font parameters and character parameters;

15 mapping a texture of the character from the font texture to the 3-D object;

 placing each 3-D object on the text page surface;

 applying one or more typesetting rules to the 3-D objects for improving a visual quality of the text string rendered from the 3-D objects;

20 rendering the text string using the 3-D graphical rendering system.

52. The method of claim 51, further comprising: displaying the rendered text string on the display device.

25 53. The method of claim 51, wherein the 3-D graphical rendering system is compatible with OpenGL.

54. The method of claim 51, wherein the game of chance is selected from the group consisting of a slot game, a keno game, a poker game, a pachinko game, a
30 video black jack game, a bingo game, a baccarat game, a roulette game, a dice game and a card game.

55. The method of claim 1, further comprising:

storing one or more generated font textures in a font library in the memory device on the gaming machine.

56. The method of claim 55, wherein the font library further comprises a plurality of font textures with the same font style and different font parameters or character parameters.

57. The method of claim 55, wherein the font library further comprises a plurality of font textures with different font styles.

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58. The method of claim 51, wherein the text string is rendered to convey textual information for one or more of i) a game outcome presentation for the game of chance, ii) a gaming maintenance operation, iii) an attract mode feature, iv) a promotional feature, v) casino information, vi) bonus game presentation and capturing the textual information on the one or more two-dimensional images.

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59. The method of claim 51, wherein the text string is rendered to convey textual information from one or more of an advertisement, news, stock quotes, electronic mail, a web page, a message service, a locator service or a hotel/casino service, a movie, a musical selection, a casino promotion, a broadcast event, a game history, a player tracking service, a drink menu and a snack menu.

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60. The method of claim of 51, wherein the typesetting rules are for one or more of i) adjusting a spacing between the characters, ii) adjusting color weights of the characters, iii) justifying the text string, iv) centering the text string, v) adjusting dimensions of strokes defining the characters, vi) aligning the characters with a baseline, vii), positioning the text string to two or more lines, viii) adjusting the spacing between two or more lines of text, ix) adjusting the vertical or horizontal alignment of the characters, x) adjusting a relative size of each character, xi) adjusting pixels defining the character and xii) and adjusting texels defining the character.

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61. The method of claim 51, further comprising:

wherein one or more of a shape of the text page surface, a position of the text page surface or an orientation of the text page surface changes as a function of time.

5 62. The method of claim 51, wherein a shape of the text page surface is a planar rectangle.

 63. The method of claim 51, wherein a shape of the text page surface is a planar multisided polygon.

10 64. The method of claim 51, wherein a shape of the text page surface is a 3-D surface.

 65. The method of claim 51, wherein the text page surface is invisible.

15 66. The method of claim 51, further comprising applying one or a static texture, an animated texture or combinations thereof to the text page surface.

 67. The method of claim 51, further comprising clipping a portion of a
20 first 3-D object that extends beyond a boundary defined by the text page surface.

 68. The method of claim 51, further comprising scaling the one or more 3-D objects to fit within boundaries defined by the text page surface.

25 69. The method of claim 51, wherein each of the 3-D objects is comprised of two triangular polygons.

 70. The method of claim 51, wherein one or more of a shape, a position and an angular orientation of the 3-D objects change as a function of time in the 3-D
30 gaming environment.

 71. The method of claim 51, further comprising:

calculating texture coordinates for each of the 3-D objects and mapping a first character from the font texture using the texture coordinates to a first 3-D object.

5 72. The method of claim 51, wherein the font parameters are one or more of a font name, a font style, a font typeface, a font weight, a font baseline, a font ascent, a font descent, a font slant, a font maximum height, a font maximum width and a number of characters in the font texture.

10 73. The method of claim 51, wherein the character parameters are one or more of a character height, a character width, a character ascent, a character descent, a character origin, character information for indicating where to place an adjacent character, a character shape or character location coordinates for locating the character in the font texture.

15 74. The method of claim 51, further comprising:
 locating a first character in the font texture using character locating coordinates.

20 75. A gaming machine comprising:
 a housing;
 a master gaming controller coupled to the housing designed or configured to control a game of chance played on the gaming machine;
 a three-dimensional (3-D) gaming environment for rendering at least a
25 game outcome presentation for the game of chance stored on a memory device on the gaming machine;
 game logic for rendering one or more two-dimensional images derived from 3-D objects in the 3-D gaming environment wherein at least one of the 3-D
 objects is a 3-D text object adapted for conveying textual information;
30 at least one display devices for displaying the rendered one or more two-dimensional images wherein the gaming machine is operable i) to receive cash or indicia of credit for a wager on the game of chance and ii) to output cash or an indicia of credit as an award for the game of chance.

76. The gaming machine of claim 75, further comprising:
a 3-D graphical rendering system for rendering the one or more 2-D
images.

5 77. The gaming machine of game 75, further comprising:
game logic designed or configured for rendering textual information from a
gaming machine maintenance operation in the 3-D gaming environment using a
plurality of the 3-D text objects and to capture the gaming machine maintenance
operation on the one or more two-dimensional images.

10 78. The gaming machine of claim 75, further comprising:
game logic designed or configured for rendering textual information from one
or more of i) a gaming machine operational feature, ii) a gaming machine
maintenance operation in the 3-D gaming environment, iii) an attract mode feature,
15 iv) a promotional feature, v) casino information or vi) a bonus game presentation
using a plurality of the 3-D text objects and to capture the gaming machine operation
feature on the one or more two-dimensional images.

79. The gaming machine of claim 75, wherein a three-dimensional
20 position of the 3-D object is time varying.

80. The gaming machine of claim 75, further comprising:
a graphical processing unit, separate from said master gaming controller,
designed or configured to execute the graphical operations used to render one or more
25 two-dimensional images derived from the 3-D objects in the 3-D gaming
environment.

81. The gaming machine of claim 75, further comprising:
a network interface board designed or configured to allow the master gaming
30 controller to communicate rendered textual information to a remote display device.

82. The gaming machine of claim 81, wherein the master gaming
controller communicates with the remote display device via at least one of a local area
network, a wide area network and the Internet.

83. The gaming machine of claim 75, wherein the game of chance is selected from the group consisting of a slot game, a keno game, a poker game, a pachinko game, a video black jack game, a bingo game, a baccarat game, a roulette game, a dice game and a card game.

84. The gaming machine of claim 75, wherein the game of chance is multiple hands of a card game presented simultaneously.

85. The gaming machine of claim 84, wherein the multiple hands of the card game are between 1 hand of poker to 1000 hands of poker.

86. The gaming machine of claim 81, wherein the gaming machine is operable to render textual information using the 3-D objects in the 3-D gaming environment from one or more of an advertisement, news, stock quotes, electronic mail, a web page, a message service, a locator service or a hotel/casino service, a movie, a musical selection, a casino promotion, a broadcast event, a maintenance operation, a player tracking service, a drink menu and a snack menu.

87. The gaming machine of claim 75, further comprising:
a multi-headed video card.

88. The gaming machine of claim 75 55. The method of claim 1, further comprising:
a memory device for storing font textures in a font library on the gaming machine.

89. The method of claim 88, wherein the font library further comprises a plurality of font textures with the same font style and different font parameters or character parameters.

90. The method of claim 88, wherein the font library further comprises a plurality of font textures with different font styles.